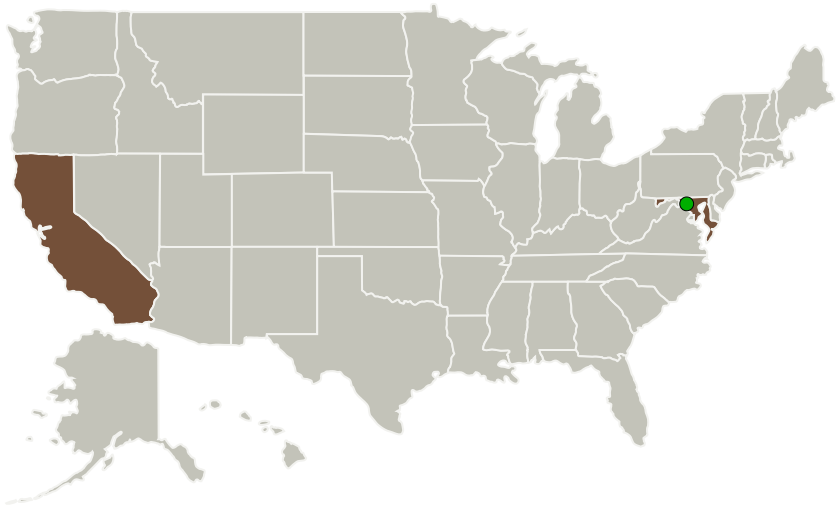
A Cold Cycle Dilution Refrigerator for Space Applications, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

The cold cycle dilution refrigerator is a continuous refrigerator capable of cooling to temperatures below 100 mK that makes use of a novel thermal magnetic pump. The refrigerator will provide continuous cooling at temperatures below 100 mK. This technology will provide cooling for detectors on future infrared and x-ray astrophysics missions and will, in turn, enable NASA to better fulfill strategic sub-goal 3D ⬭ to discover the origin, structure, evolution and destiny of the universe, and search for Earth-like planets.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Atlas Scientific	Lead Organization	Industry	San Jose, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
California	Maryland

A Cold Cycle Dilution Refrigerator for Space Applications, Phase I

Table of Contents

A Cold Cycle Dilution Refrigerator for Space Applications, Phase I

Completed Technology Project (2011 - 2011)

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137806)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Atlas Scientific

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

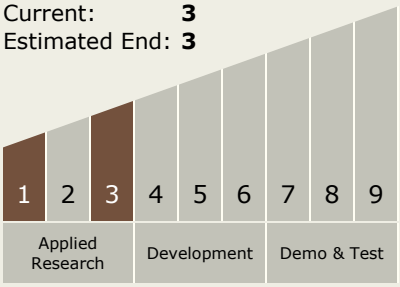
Carlos Torrez

Principal Investigator:

James Maddocks

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



A Cold Cycle Dilution Refrigerator for Space Applications, Phase I

Completed Technology Project (2011 - 2011)

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System